



Florida Onsite Sewage Nitrogen Reduction Strategies Study

Task C.18

Test Facility Close-out Report

March 2015

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HAZEN AND SAWYER
Environmental Engineers & Scientists

In association with:



AET
Applied Environmental Technology

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Florida Onsite Sewage Nitrogen Reduction Strategies Study

TASK C.18

Test Facility Close-out Report

Prepared for:

Florida Department of Health
Division of Disease Control and Health Protection
Bureau of Environmental Health
Onsite Sewage Programs
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March 2015

Prepared by:

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Task C.18: Test Facility Close-out Report

1.0 Background

Task A of the Florida Onsite Sewage Nitrogen Reduction Strategies Study included the evaluation of passive treatment systems to remove nitrogen from septic tank effluent. The Passive Nitrogen Removal Study II (PNRS II) was a follow-up to the previous experimental evaluations of passive nitrogen removal technologies conducted in Passive Nitrogen Removal Study I. The objective of the PNRS II study was to extend the field pilot testing of the two-stage biofiltration process that was initiated in PNRS I. A unique test facility was constructed for the purpose of this evaluation. The Task A.15 PNRS II Quality Assurance Project Plan (QAPP) documents the objectives, experimental biofiltration systems, monitoring framework, sample frequency and duration, and analytical methods used at the PNRS II Test Facility. Seven sample events were conducted at this site: July 2010 August 2010, November 2010, January 2011, March 2011, May 2011 and September 2011; these were documented in the Task A.28 PNRS II Test Facility Final Report.

Task C of the Florida Onsite Sewage Nitrogen Reduction Strategies Study included monitoring at field sites in Florida to evaluate nitrogen reduction in soil and groundwater, to assess groundwater impacts from various onsite wastewater systems, and to provide data for parameter estimation, verification, and validation of models developed in Task D. Controlled pilot-scale testing at the University of Florida Gulf Coast Research and Education Center (GCREC) soil and groundwater (S&GW) test facility was monitored for a range of operating conditions and to determine mechanisms critical for nitrogen reduction. The Task C.5 QAPP documents the objectives, monitoring framework, sample frequency and duration, and analytical methods used at the GCREC S&GW test facility. Six sample events were conducted at this site: June 2012 August 2012, October 2012, January 2013, March 2013, and June 2013; these were documented in the Task C.16 S&GW Test Facility Sample Event Reports. The results of this testing are documented in the Task C.17 S&GW Test Facility Data Summary Reports.

The PNRS II test facility and S&GW test facility were located at the University of Florida Gulf Coast Research and Education Center (GCREC) in southeast Hillsborough County, Florida. Details of the design and construction of the PNRS II test facility were presented previously in Task A.17, A.18, A.19, A.24 and A.28 documents. Details of the design and construction of the S&GW test facility were presented previously in Task C.6, C.7, C.8, C10, C.11, C.12, C.15, A.15 and A.17 documents.

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2.0 Purpose

As outlined in the memorandum of agreement (MOU) between the DOH and GCREC for use of the GCREC property for the FOSNRS research, DOH agreed to properly abandon the research facility and reconnect the sewage source to the existing sewage system, if desired by GCREC. As indicated in the DOH agreement with Hazen and Sawyer, P.C. (H&S), H&S is responsible to determine if the test facility infrastructure will be transferred to the property owner or the site restored as desired by GCREC. In February 2015, GCREC staff decided that the research facility should be abandoned and most of the site restored. This report documents that the test facility site was restored as desired by GCREC as outlined below:

- Existing GCREC onsite wastewater system
 - Shall be restored to prior condition and disconnected from test facility.
 - Test facility dose pump will be removed from GCREC pre-existing tankage.
 - Flowmeters to GCREC mound system will remain to allow flow monitoring in the future (currently bypassed).
 - All monitoring wells and sampling points removed.
- PNRS II test facility covered deck area
 - The equipment (tanks, aboveground piping, control panel, electrical, etc.) will be removed and disposed of, unless specific materials desired by GCREC.
 - The underground pipe can be abandoned in place if cut and capped.
 - To leave the wooden deck, storage shed, workbench and roof cover in place.
 - To abandon the concrete Tank 1 in place per FAC 64E-6.011.
 - The potable water connection will remain.
- S&GW test facility mini-mounds
 - To leave the potable water connection and hose bibs in place.
 - To remove or abandon the wastewater components (tanks, drip irrigation systems, electrical). The underground pipe can be abandoned in place if cut and capped.
 - To abandon the three concrete tanks (Nitrification unit, Tank 4 and Tank 5) in place per FAC 64E-6.011. GPS coordinates will be provided for future locating.
 - To remove the monitoring equipment from the mini-mounds.
 - To remove or abandon in place the groundwater monitoring wells.
 - To level the mini-mounds to natural grade, with assistance from GCREC.
 - To abandon or dispose of drainfield spoil material per FAC 64E-6.015.

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3.0 Site Close-out

As discussed, GCREC desired to have the test facility properly abandoned and the sewage source to the existing sewage system reconnected. The abandonment permit issued by Hillsborough DOH to complete the tank and drainfield abandonment work is provided in Appendix A. The test facility close-out work as depicted Figure 1 included:

- GCREC existing sewage system
 - The test facility dose pump was removed from the GCREC onsite system tank.
 - All monitoring wells and sampling points were removed.
- PNRS II test facility covered deck area
 - The equipment (media, tanks, aboveground piping, control panel, electrical, etc.) were removed and disposed of, unless specific materials were desired by GCREC.
 - The underground pipe was abandoned in place.
 - The concrete Tank 1 (1050 gallon) was abandoned in place per FAC 64E-6.011.
- S&GW test facility mini-mounds
 - The wastewater components (drip irrigation systems, plastic tanks, electrical, polyethylene denitrification tanks, infiltrator trenches, etc.) were removed and either stored or disposed of.
 - The underground pipe was abandoned in place.
 - The three concrete tanks: Nitrification unit (500 gpd LA-Hoot), Tank 4 (300 gallon) and Tank 5 (300 gallon) were abandoned in place per FAC 64E-6.011.
 - The monitoring equipment was removed and either stored or disposed of.
 - Monitoring equipment that was protected by 6 inch irrigation covers were dug up and removed.
 - The drainfield spoil material was abandoned per FAC 64E-6.015.
 - The mini-mounds were leveled to natural grade.

A total of 253 specific monitoring points were removed during the S&GW Test Facility site close-out completed in February and March 2015. Table 1 lists the monitoring points that were removed. The S&GW test facility monitoring point locations are provided in Figures 2 and 3 which reference the ID number in Table 1.

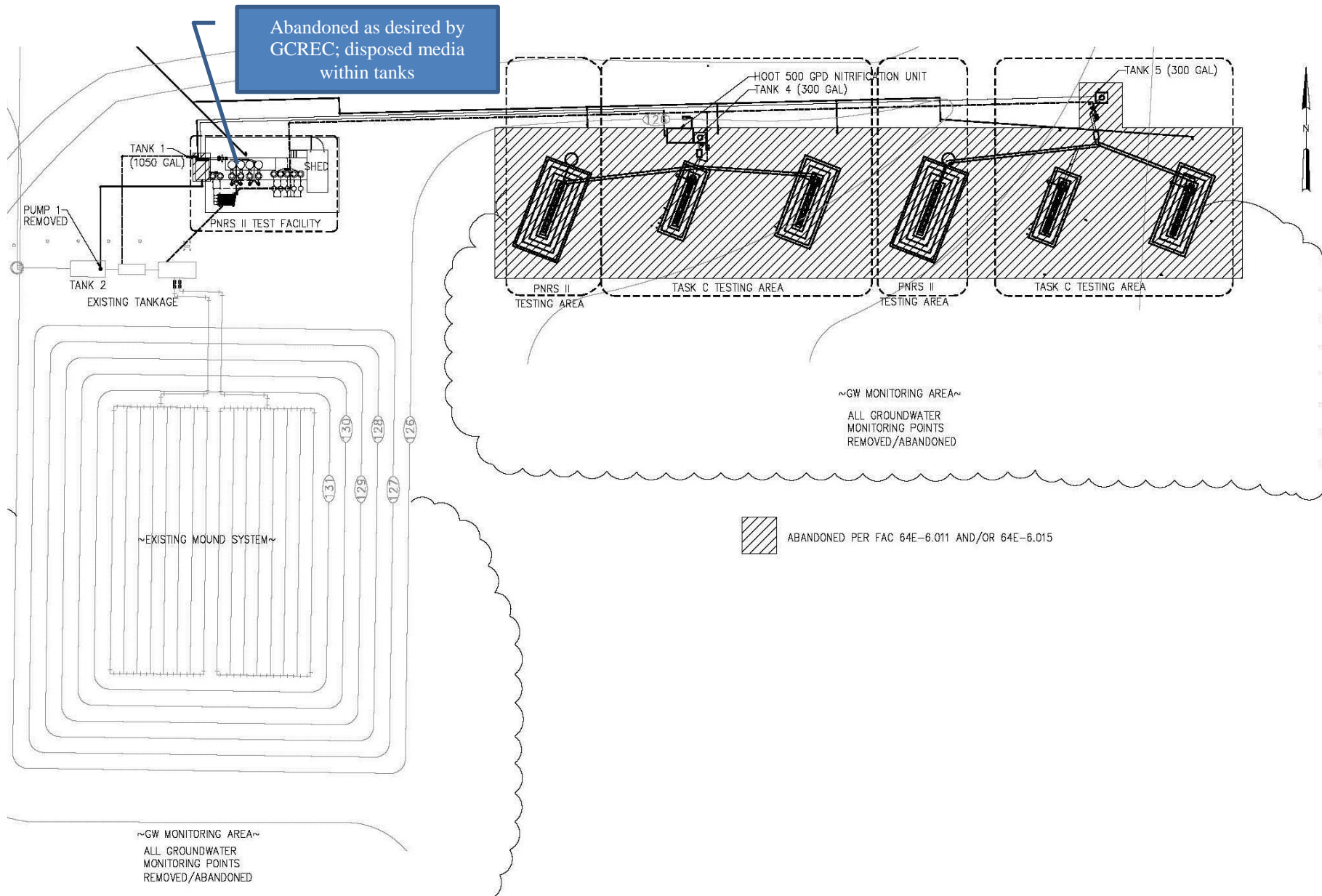


Figure 1
Site Plan of Abandonment Work at Test Facility

Table 1
S&GW Test Facility Monitoring Points Removed

ID #	Sample Identification	Test Area	Grid Location	Northing	Easting	Elev NGVD 29 ¹	Notes
1	TA1-PAN-12-N	TA1	North				2' x 3.3' SST pan lysimeter
2	TA1-OBS-N	TA1	North	1244816.74	582859.20	132.50	4"D observation port with slots
3	TA1-OBS-S	TA1	South	1244807.75	582855.08	132.88	4"D observation port without slots
4	TA1-SM-39-N	TA1	North	1244817.38	582860.13	130.27	2"D soil moisture tube with 6" casing
5	TA1-SM-39-C	TA1	Center	1244812.80	582858.09	130.23	2"D soil moisture tube with 6" casing
6	TA1-SM-39-S	TA1	South	1244803.79	582854.15	130.24	2"D soil moisture tube with 6" casing
7	TA1-SM-BKG-S	TA1	South	1244778.23	582851.49	128.69	2"D soil moisture tube with 6" casing
8	TA1-SM-BKG-E	TA1	East	1244814.73	582868.76	129.29	2"D soil moisture tube with 6" casing
9	TA1-PZ-11-EF2	TA1	EF2	1244812.14	582857.35	133.59	1"D standpipe piezometer, 5' screen
10	TA1-LY-24-C	TA1	Center	1244811.87	582857.75	133.69	2"D suction lysimeter, 9" cup
11	TA1-LY-12-S	TA1	South	1244804.42	582853.25	132.60	2"D suction lysimeter, 9" cup
12	TA1-LY-24-S	TA1	South	1244804.42	582854.46	134.14	2"D suction lysimeter, 9" cup
13	TA1-LY-42-S	TA1	South	1244805.37	582853.79	132.66	2"D suction lysimeter, 9" cup
14	TA1-T-6-C	TA1	Center	1244813.56	582858.66	132.34	tensiometer
15	TA1-T-12-C	TA1	Center	1244813.75	582858.12	132.34	tensiometer
16	TA1-T-24-C	TA1	Center	1244813.77	582857.64	132.33	tensiometer
17	TA1-T-36-C	TA1	Center	1244813.80	582857.36	132.36	tensiometer
18	TA1-T-42-C	TA1	Center	1244813.34	582857.00	132.88	tensiometer
19	TA1-T-6-S	TA1	South	1244804.28	582853.77	132.32	tensiometer
20	TA1-T-12-S	TA1	South	1244803.87	582852.93	132.35	tensiometer
21	TA1-T-24-S	TA1	South	1244803.71	582852.77	132.36	tensiometer
22	TA1-T-36-S	TA1	South	1244803.49	582852.89	132.38	tensiometer
23	TA1-T-42-S	TA1	South	1244803.01	582853.26	132.80	tensiometer
24	TA1-PZ-11-J4	TA1	J4	1244805.79	582849.87	133.57	1"D standpipe piezometer, 5' screen
25	TA1-PZ-11-K4	TA1	K4	1244803.97	582849.03	133.58	1"D standpipe piezometer, 5' screen
26	TA1-PZ-11-L2	TA1	L2	1244800.25	582851.77	133.57	1"D standpipe piezometer, 5' screen
27	TA1-PZ-11-L3	TA1	L3	1244801.20	582849.94	133.57	1"D standpipe piezometer, 5' screen
28	TA1-PZ-11-L4	TA1	L4	1244802.21	582848.15	133.57	1"D standpipe piezometer, 5' screen
29	TA1-PZ-11-L5	TA1	L5	1244803.08	582846.26	133.57	1"D standpipe piezometer, 5' screen
30	TA1-PZ-09-N3	TA1	N3	1244798.01	582846.48	130.43	1"D standpipe piezometer, 5' screen

Table 1 (continued)
S&GW Test Facility Monitoring Points Removed

ID #	Sample Identification	Test Area	Grid Location	Northing	Easting	Elev NGVD 29'	Notes
31	TA1-PZ-16-N3	TA1	N3	1244798.02	582846.37	130.44	1"D standpipe piezometer, 2.5' screen
32	TA1-PZ-09-O7	TA1	O7	1244798.67	582839.96	130.08	1"D standpipe piezometer, 5' screen
33	TA1-PZ-16-O7	TA1	O7	1244799.11	582839.97	130.30	1"D standpipe piezometer, 2.5' screen
34	TA1-PZ-09-M9	TA1	M9	1244804.22	582839.66	130.60	1"D standpipe piezometer, 5' screen
35	TA1-PZ-16-M9	TA1	M9	1244804.35	582839.62	130.64	1"D standpipe piezometer, 2.5' screen
36	TA1-PZ-09-I7	TA1	I7	1244810.91	582845.19	130.27	1"D standpipe piezometer, 5' screen
37	TA1-PZ-16-I7	TA1	I7	1244810.78	582845.02	130.33	1"D standpipe piezometer, 2.5' screen
38	TA1-PZ-09-RS16	TA1	RS16	1244792.19	582817.42	129.65	1"D standpipe piezometer, 5' screen
39	TA1-PZ-16-RS16	TA1	RS16	1244792.14	582817.50	129.72	1"D standpipe piezometer, 2.5' screen
40	TA1-PZ-09-RS18	TA1	RS18	1244792.34	582812.82	130.25	1"D standpipe piezometer, 5' screen
41	TA1-PZ-16-RS18	TA1	RS18	1244792.43	582812.72	130.25	1"D standpipe piezometer, 2.5' screen
42	TA2-PAN-12-N	TA2	North				2' x 3.3' SST pan lysimeter
43	TA2-OBS-N	TA2	North	1244818.77	582722.04	131.67	4"D observation port with slots
44	TA2-OBS-S	TA2	South	1244809.76	582718.30	132.27	4"D observation port without slots
45	TA2-SM-39-C	TA2	Center	1244814.95	582721.02	129.80	2"D soil moisture tube with 6" casing
46	TA2-PZ-10-EF2	TA2	EF2	1244814.23	582720.22	133.90	1"D standpipe piezometer, 5' screen
47	TA2-LY-24-C	TA2	Center	1244814.09	582720.59	132.60	2"D suction lysimeter, 9" cup
48	TA2-LY-12-S	TA2	South	1244806.60	582716.48	132.02	2"D suction lysimeter, 9" cup
49	TA2-LY-24-S	TA2	South	1244806.64	582717.52	132.62	2"D suction lysimeter, 9" cup
50	TA2-LY-42-S	TA2	South	1244807.39	582716.98	133.11	2"D suction lysimeter, 9" cup
51	TA2-PZ-10-H5	TA2	H5	1244810.74	582712.43	133.76	1"D standpipe piezometer, 5' screen
52	TA2-PZ-10-J5	TA2	J5	1244807.11	582710.94	133.73	1"D standpipe piezometer, 5' screen
53	TA2-PZ-10-K5	TA2	K5	1244805.14	582710.05	133.74	1"D standpipe piezometer, 5' screen
54	TA2-PZ-10-L2	TA2	L2	1244801.12	582714.87	133.74	1"D standpipe piezometer, 5' screen
55	TA2-PZ-10-L3	TA2	L3	1244801.83	582713.03	133.73	1"D standpipe piezometer, 5' screen
56	TA2-PZ-10-L4	TA2	L4	1244802.60	582711.25	133.52	1"D standpipe piezometer, 5' screen
57	TA2-PZ-10-L5	TA2	L5	1244803.37	582709.39	133.73	1"D standpipe piezometer, 5' screen
58	TA2-PZ-10-L6	TA2	L6	1244804.19	582707.50	133.72	1"D standpipe piezometer, 5' screen

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Table 1 (continued)
S&GW Test Facility Monitoring Points Removed

ID #	Sample Identification	Test Area	Grid Location	Northing	Easting	Elev NGVD 29'	Notes
59	TA2-PZ-09-M4	TA2	M4	1244800.19	582709.27	129.51	1"D standpipe piezometer, 5' screen
60	TA2-PZ-16-M4	TA2	M4	1244800.27	582709.49	129.50	1"D standpipe piezometer, 2.5' screen
61	TA2-PZ-09-N7	TA2	N7	1244801.15	582703.29	129.36	1"D standpipe piezometer, 5' screen
62	TA2-PZ-16-N7	TA2	N7	1244801.21	582703.43	129.37	1"D standpipe piezometer, 2.5' screen
63	TA2-PZ-09-I7	TA2	I7	1244810.20	582707.91	129.10	1"D standpipe piezometer, 5' screen
64	TA2-PZ-16-I7	TA2	I7	1244810.37	582707.66	129.52	1"D standpipe piezometer, 2.5' screen
65	TA2-PZ-09-L8	TA2	L8	1244806.27	582704.93	129.28	1"D standpipe piezometer, 5' screen
66	TA2-PZ-16-L8	TA2	L8	1244806.33	582704.81	129.27	1"D standpipe piezometer, 2.5' screen
67	TA2-PZ-09-TU19	TA2	TU19	1244790.44	582673.66	128.68	1"D standpipe piezometer, 5' screen
68	TA2-PZ-16-TU19	TA2	TU19	1244790.49	582673.49	128.62	1"D standpipe piezometer, 2.5' screen
69	TA2-PZ-09-TU21	TA2	TU21	1244790.32	582669.75	128.58	1"D standpipe piezometer, 5' screen
70	TA2-PZ-16-TU21	TA2	TU21	1244790.60	582669.40	128.98	1"D standpipe piezometer, 2.5' screen
71	TA3-PAN-12-N	TA3	North				2' x 3.3' SST pan lysimeter
72	TA3-OBS-N	TA3	North	1244817.49	582814.57	131.20	4"D observation port with slots
73	TA3-OBS-S	TA3	South	1244808.15	582811.07	131.11	4"D observation port without slots
74	TA3-SM-39-N	TA3	North	1244817.96	582815.53	130.59	2"D soil moisture tube with 6" casing
75	TA3-SM-39-C	TA3	Center	1244813.53	582813.63	130.60	2"D soil moisture tube with 6" casing
76	TA3-SM-39-S	TA3	South	1244804.15	582809.89	130.57	2"D soil moisture tube with 6" casing
77	TA3-SM-BKG-S	TA3	South	1244795.29	582807.19	129.32	2"D soil moisture tube with 6" casing
78	TA3-SM-BKG-E	TA3	East				2"D soil moisture tube with 6" casing
79	TA3-LY-24-C	TA3	Center	1244812.47	582813.21	133.45	2"D suction lysimeter, 9" cup
80	TA3-LY-12-S	TA3	South	1244804.97	582809.16	132.24	2"D suction lysimeter, 9" cup
81	TA3-LY-24-S	TA3	South	1244804.93	582810.17	132.90	2"D suction lysimeter, 9" cup
82	TA3-LY-42-S	TA3	South	1244805.73	582809.79	132.98	2"D suction lysimeter, 9" cup
83	TA3-T-6-C	TA3	Center	1244814.37	582813.76	132.19	tensiometer
84	TA3-T-12-C	TA3	Center	1244814.50	582813.46	132.70	tensiometer
85	TA3-T-24-C	TA3	Center	1244814.56	582813.15	132.23	tensiometer
86	TA3-T-36-C	TA3	Center	1244814.31	582812.76	131.70	tensiometer

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Table 1 (continued)
S&GW Test Facility Monitoring Points Removed

ID #	Sample Identification	Test Area	Grid Location	Northing	Easting	Elev NGVD 29'	Notes
87	TA3-T-42-C	TA3	Center	1244813.89	582812.49	132.20	tensiometer
88	TA3-T-6-S	TA3	South	1244805.33	582809.71	132.19	tensiometer
89	TA3-T-12-S	TA3	South	1244804.36	582809.00	132.69	tensiometer
90	TA3-T-24-S	TA3	South	1244803.69	582808.77	132.22	tensiometer
91	TA3-T-36-S	TA3	South	1244803.59	582808.72	131.71	tensiometer
92	TA3-T-42-S	TA3	South	1244803.27	582809.06	132.21	tensiometer
93	TA3-PZ-11-EF2	TA3	EF2	1244812.64	582812.80	133.82	1"D standpipe piezometer, 5' screen
94	TA3-PZ-11-I2	TA3	I2	1244806.39	582810.24	133.54	1"D standpipe piezometer, 5' screen
95	TA3-PZ-10-J5	TA3	J5	1244806.06	582803.49	133.49	1"D standpipe piezometer, 5' screen
96	TA3-PZ-10-K5	TA3	K5	1244804.12	582802.85	133.49	1"D standpipe piezometer, 5' screen
97	TA3-PZ-11-L2	TA3	L2	1244800.38	582808.17	133.51	1"D standpipe piezometer, 5' screen
98	TA3-PZ-11-L3	TA3	L3	1244800.93	582806.21	133.51	1"D standpipe piezometer, 5' screen
99	TA3-PZ-11-L4	TA3	L4	1244801.63	582804.23	133.50	1"D standpipe piezometer, 5' screen
100	TA3-PZ-10-L5	TA3	L5	1244802.21	582802.23	133.49	1"D standpipe piezometer, 5' screen
101	TA3-PZ-09-N3	TA3	N3	1244798.56	582803.29	129.88	1"D standpipe piezometer, 5' screen
102	TA3-PZ-16-N3	TA3	N3	1244798.87	582803.18	129.89	1"D standpipe piezometer, 2.5' screen
103	TA3-PZ-09-O7	TA3	O7	1244798.85	582797.09	130.06	1"D standpipe piezometer, 5' screen
104	TA3-PZ-16-O7	TA3	O7	1244798.94	582796.81	130.26	1"D standpipe piezometer, 2.5' screen
105	TA3-PZ-09-I7	TA3	I7	1244809.85	582798.46	130.06	1"D standpipe piezometer, 5' screen
106	TA3-PZ-16-I7	TA3	I7	1244810.00	582798.53	130.06	1"D standpipe piezometer, 2.5' screen
107	TA3-PZ-09-M9	TA3	M9	1244803.45	582796.14	130.18	1"D standpipe piezometer, 5' screen
108	TA3-PZ-16-M9	TA3	M9	1244803.44	582796.02	130.12	1"D standpipe piezometer, 2.5' screen
109	TA3-PZ-09-ST14	TA3	ST14	1244790.15	582780.80	129.88	1"D standpipe piezometer, 5' screen
110	TA3-PZ-16-ST14	TA3	ST14	1244790.27	582780.68	129.81	1"D standpipe piezometer, 2.5' screen
111	TA3-PZ-09-ST16	TA3	ST16	1244790.74	582776.81	129.54	1"D standpipe piezometer, 5' screen
112	TA3-PZ-16-ST16	TA3	ST16	1244790.24	582776.71	130.00	1"D standpipe piezometer, 2.5' screen
113	TA4-PAN-12-N	TA4	North				2' x 3.3' SST pan lysimeter
114	TA4-OBS-N	TA4	North	1244819.86	582676.19	129.91	4"D observation port with slots

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Table 1 (continued)
S&GW Test Facility Monitoring Points Removed

ID #	Sample Identification	Test Area	Grid Location	Northing	Easting	Elev NGVD 29 ¹	Notes
115	TA4-OBS-S	TA4	South	1244810.58	582672.01	129.85	4"D observation port without slots
116	TA4-SM-39-C	TA4	Center	1244815.85	582674.87	129.25	2"D soil moisture tube with 6" casing
117	TA4-LY-24-C	TA4	Center	1244814.82	582674.46	132.10	2"D suction lysimeter, 9" cup
118	TA4-LY-12-S	TA4	South	1244807.65	582670.18	130.89	2"D suction lysimeter, 9" cup
119	TA4-LY-24-S	TA4	South	1244807.45	582671.38	132.75	2"D suction lysimeter, 9" cup
120	TA4-LY-42-S	TA4	South	1244808.40	582670.62	132.57	2"D suction lysimeter, 9" cup
121	TA4-PZ-11-EF2	TA4	EF2	1244815.06	582674.02	132.53	1"D standpipe piezometer, 5' screen
122	TA4-PZ-10-H5	TA4	H5	1244812.91	582666.75	132.48	1"D standpipe piezometer, 5' screen
123	TA4-PZ-10-J5	TA4	J5	1244809.21	582664.90	132.47	1"D standpipe piezometer, 5' screen
124	TA4-PZ-10-K5	TA4	K5	1244807.45	582664.07	132.47	1"D standpipe piezometer, 5' screen
125	TA4-PZ-11-L2	TA4	L2	1244803.06	582668.66	132.47	1"D standpipe piezometer, 5' screen
126	TA4-PZ-11-L3	TA4	L3	1244804.02	582666.85	132.48	1"D standpipe piezometer, 5' screen
127	TA4-PZ-11-L4	TA4	L4	1244804.79	582665.10	132.46	1"D standpipe piezometer, 5' screen
128	TA4-PZ-11-L5	TA4	L5	1244805.65	582663.28	132.46	1"D standpipe piezometer, 5' screen
129	TA4-PZ-11-L6	TA4	L6	1244806.56	582661.46	132.46	1"D standpipe piezometer, 5' screen
130	TA4-PZ-09-M4	TA4	M4	1244802.46	582663.97	128.96	1"D standpipe piezometer, 5' screen
131	TA4-PZ-16-M4	TA4	M4	1244802.29	582664.28	129.54	1"D standpipe piezometer, 5' screen
132	TA4-PZ-09-N7	TA4	N7	1244807.44	582664.14	132.47	1"D standpipe piezometer, 5' screen
133	TA4-PZ-16-N7	TA4	N7	1244803.91	582657.76	128.94	1"D standpipe piezometer, 5' screen
134	TA4-PZ-09-I7	TA4	I7	1244812.68	582663.21	128.83	1"D standpipe piezometer, 5' screen
135	TA4-PZ-16-I7	TA4	I7	1244812.80	582663.08	129.25	1"D standpipe piezometer, 5' screen
136	TA4-PZ-09-L8	TA4	L8	1244807.67	582657.70	128.63	1"D standpipe piezometer, 5' screen
137	TA4-PZ-16-L8	TA4	L8	1244807.84	582657.44	128.92	1"D standpipe piezometer, 5' screen
138	TA4-PZ-09-TU14	TA4	TU14	1244793.10	582638.92	128.32	1"D standpipe piezometer, 5' screen
139	TA4-PZ-16-TU14	TA4	TU14	1244792.96	582639.30	129.06	1"D standpipe piezometer, 5' screen
140	TA4-PZ-09-TU16	TA4	TU16	1244794.18	582633.89	128.57	1"D standpipe piezometer, 5' screen
141	TA4-PZ-16-TU16	TA4	TU16	1244793.99	582634.17	128.70	1"D standpipe piezometer, 5' screen
142	TA5-OBS-I	TA5	Center	1244812.47	582770.36	132.52	4"D observation port, for infiltrator system

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Table 1 (continued)
S&GW Test Facility Monitoring Points Removed

ID #	Sample Identification	Test Area	Grid Location	Northing	Easting	Elev NGVD 29 ¹	Notes
143	TA5-OBS-N	TA5	North	1244817.64	582767.53	132.87	3"D observation port connected to collection pipe at bottom of sloped liner
144	TA5-OBS-S	TA5	South	1244810.89	582764.74	132.91	3"D observation port connected to collection pipe at bottom of sloped liner
145	TA5-PZ-I	TA5	South	1244802.11	582764.97	133.23	1"D standpipe piezometer, 5' screen south of infiltrator
146	TA5-LY-C	TA5	Center	1244814.05	582766.03	133.15	2"D suction lysimeter, 9" cup at mixture and sand interface
147	TA5-LINER-SP	TA5	North	1244827.69	582771.40	131.20	3"D sample port
148	TA5-CLEANOUT	TA5	North	1244829.07	582772.03	131.60	4"D clean-out
149	TA5-Denite Tank	TA5	North	1244831.25	582772.19	129.90	
150	TA6-OBS-I	TA6	Center	1244814.51	582630.94	131.40	4"D observation port, for infiltrator system
151	TA6-OBS-N	TA6	North	1244819.57	582628.85	131.94	3"D observation port connected to collection pipe at bottom of sloped liner
152	TA6-OBS-S	TA6	South	1244812.49	582625.84	132.28	3"D observation port connected to collection pipe at bottom of sloped liner
153	TA6-PZ-I	TA6	South	1244804.06	582626.81	133.43	1"D standpipe piezometer, 5' screen south of infiltrator
154	TA6-LY-C	TA6	Center	1244815.99	582627.26	132.41	2"D suction lysimeter, 9" cup at mixture and sand interface
155	TA6-LINER-SP	TA6	North	1244829.10	582632.72	130.89	3"D sample port
156	TA6-CLEANOUT	TA6	North	1244830.50	582633.21	130.48	4"D clean-out
157	TA6-Denite Tank	TA6	North	1244832.30	582633.85	128.98	
158	PZ01-BKG-09	BKG		1244957.50	582852.42	131.28	1.25"D standpipe piezometer, 5' screen
159	LY01-BKG-24	BKG		1244957.82	582856.59	131.60	2"D suction lysimeter, 9" cup
160	LY02-BKG-42	BKG		1244960.88	582857.29	132.03	2"D suction lysimeter, 9" cup
161	BKG-SM-N	BKG		1244959.90	582854.52	130.62	2"D soil moisture tube with 6" casing
162	PZ04-BKG-09	BKG		1244850.25	582615.24	129.45	1.25"D standpipe piezometer, 5' screen
163	PZ24-BKG-26	BKG		1244854.09	582614.74	132.38	2"D standpipe piezometer, 5' screen
164	PZ29-BKG-09	BKG		1244846.58	582755.86	130.93	¾"D standpipe piezometer, 5' screen

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Table 1 (continued)
S&GW Test Facility Monitoring Points Removed

ID #	Sample Identification	Test Area	Grid Location	Northing	Easting	Elev NGVD 29'	Notes
165	PZ30-BKG-16	BKG		1244845.66	582758.17	132.29	1"D standpipe piezometer, 5' screen
166	PZ31-BKG-26	BKG		1244845.87	582757.80	128.99	1"D standpipe piezometer, 5' screen
167	PZ32-BKG-09	BKG		1244843.82	582842.31	133.51	1"D standpipe piezometer, 5' screen
168	PZ33-BKG-16	BKG		1244844.30	582845.33	132.84	1"D standpipe piezometer, 5' screen
169	PZ34-BKG-26	BKG		1244843.73	582845.24	130.45	1"D standpipe piezometer, 5' screen
170	PZ35-BKG-09	BKG		1244702.71	582872.85	129.18	1"D standpipe piezometer, 5' screen
171	PZ36-BKG-16	BKG		1244702.63	582873.08	131.84	1"D standpipe piezometer, 5' screen
172	PZ37-BKG-26	BKG		1244702.80	582872.92	128.31	1"D standpipe piezometer, 5' screen
173	PZ38-BKG-09	BKG		1244582.29	582675.83	126.66	1"D standpipe piezometer, 5' screen
174	PZ39-BKG-16	BKG		1244582.30	582675.42	129.60	1"D standpipe piezometer, 5' screen
175	PZ40-BKG-26	BKG		1244582.13	582675.66	126.10	1"D standpipe piezometer, 5' screen
181	PZ41	TA1		1244799.29	582853.53	132.29	1"D standpipe piezometer, 5' screen
182	PZ42	TA1		1244796.65	582850.26	132.99	1"D standpipe piezometer, 5' screen
183	PZ43	TA1		1244825.21	582874.55	131.34	1"D standpipe piezometer, 5' screen
184	PZ44	TA3		1244796.21	582804.15	131.82	1"D standpipe piezometer, 5' screen
185	PZ45	TA3		1244799.84	582810.10	132.48	1"D standpipe piezometer, 5' screen
186	PZ46	TA1		1244794.92	582853.97	131.81	1"D standpipe piezometer, 5' screen
187	PZ47	TA1		1244797.39	582857.04	131.78	1"D standpipe piezometer, 5' screen
188	PZ48	TA1		1244792.81	582857.49	129.70	1"D standpipe piezometer, 5' screen
189	PZ49	TA2		1244797.70	582710.95	131.91	1"D standpipe piezometer, 5' screen
190	PZ50	TA2		1244800.34	582716.87	131.76	1"D standpipe piezometer, 5' screen
191	PZ51	TA4		1244828.71	582693.52	131.90	1"D standpipe piezometer, 5' screen
192	PZ52	TA4		1244799.14	582665.17	131.69	1"D standpipe piezometer, 5' screen
193	PZ53	TA4		1244802.18	582670.34	131.57	1"D standpipe piezometer, 5' screen
194	PZ54	TA4		1244797.40	582668.77	128.85	1"D standpipe piezometer, 5' screen
195	PZ55	TA2		1244796.18	582714.66	129.61	1"D standpipe piezometer, 5' screen
196	PZ56	TA3		1244795.18	5825808.75	130.86	1"D standpipe piezometer, 5' screen
197	PZ57	TA4		1244795.69	582672.29	128.99	3/4"D standpipe piezometer, 5' screen
198	TA3-PZ-BKG5	TA3	BKG5			131.36	New well installed Oct 2013 for Tracer Test No. 3
199	TA3-PZ-C2	TA3	C2			132.08	New well installed Oct 2013 for Tracer Test No. 3

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Table 1 (continued)
S&GW Test Facility Monitoring Points Removed

ID #	Sample Identification	Test Area	Grid Location	Northing	Easting	Elev NGVD 29'	Notes
200	TA3-PZ-EF0.5	TA3	EF0.5			131.24	New well installed Oct 2013 for Tracer Test No. 3
201	TA3-PZ-EF3.5	TA3	EF3.5			131.52	New well installed Oct 2013 for Tracer Test No. 3
202	TA3-PZ-G3.5	TA3	G3.5			131.05	New well installed Oct 2013 for Tracer Test No. 3
203	TA3-PZ-H1'	TA3	H1'			131.41	New well installed Oct 2013 for Tracer Test No. 3
204	TA3-PZ-H0.5	TA3	H0.5			131.25	New well installed Oct 2013 for Tracer Test No. 3
205	TA3-PZ-H3.5	TA3	H3.5			131.04	New well installed Oct 2013 for Tracer Test No. 3
206	TA3-PZ-I3.5	TA3	I3.5			131.49	New well installed Oct 2013 for Tracer Test No. 3
207	TA3-PZ-I5	TA3	I5			130.90	New well installed Oct 2013 for Tracer Test No. 3
208	TA3-PZ-J1'	TA3	J1'			131.24	New well installed Oct 2013 for Tracer Test No. 3
209	TA3-PZ-J0.5	TA3	J0.5			131.34	New well installed Oct 2013 for Tracer Test No. 3
210	TA3-PZ-J3.5	TA3	J3.5			130.91	New well installed Oct 2013 for Tracer Test No. 3
211	TA3-PZ-K2	TA3	K2			131.46	New well installed Oct 2013 for Tracer Test No. 3
212	TA3-PZ-K3.5	TA3	K3.5			131.28	New well installed Oct 2013 for Tracer Test No. 3
213	TA3-PZ-L1'	TA3	L1'			131.52	New well installed Oct 2013 for Tracer Test No. 3
214	TA3-PZ-L0	TA3	L0			131.18	New well installed Oct 2013 for Tracer Test No. 3
215	TA3-PZ-M1	TA3	M1			131.54	New well installed Oct 2013 for Tracer Test No. 3
216	TA3-PZ-M2	TA3	M2			131.40	New well installed Oct 2013 for Tracer Test No. 3
217	TA3-PZ-M3	TA3	M3			131.34	New well installed Oct 2013 for Tracer Test No. 3
218	TA3-PZ-M5	TA3	M5			131.45	New well installed Oct 2013 for Tracer Test No. 3
219	TA3-PZ-O1.5	TA3	O1.5			131.16	New well installed Oct 2013 for Tracer Test No. 3
220	TA3-PZ-O3	TA3	O3			130.88	New well installed Oct 2013 for Tracer Test No. 3
221	TA3-PZ-P5	TA3	P5			129.28	New well installed Oct 2013 for Tracer Test No. 3
222	TT2-0D	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2

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Table 1 (continued)
S&GW Test Facility Monitoring Points Removed

ID #	Sample Identification	Test Area	Grid Location	Northing	Easting	Elev NGVD 29 ¹	Notes
223	TT2-3B	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
224	TT2-3C	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
225	TT2-3D	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
226	TT2-3E	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
227	TT2-3F	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
228	TT2-3G	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
229	TT2-3H	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
230	TT2-4A	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
231	TT2-4C	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
232	TT2-4D	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
233	TT2-4E	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
234	TT2-4G	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
235	TT2-4H	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
236	TT2-4I	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
237	TT2-5D	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
238	TT2-5E	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
239	TT2-5F	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
240	TT2-5G	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
241	TT2-5H	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
242	TT2-5I	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
243	TT2-7F	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
244	TT2-7G	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
245	TT2-7H	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2

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Table 1 (continued)
S&GW Test Facility Monitoring Points Removed

ID #	Sample Identification	Test Area	Grid Location	Northing	Easting	Elev NGVD 29 ¹	Notes
246	TT2-7I	N/A	N/A				New well installed Nov 2011 for Tracer Test No. 2
247	TT2-7J	N/A	N/A				New well installed Dec 2011 for Tracer Test No. 2
248	TT2-12F	N/A	N/A				New well installed Dec 2011 for Tracer Test No. 2
249	TT2-12I	N/A	N/A				New well installed Dec 2011 for Tracer Test No. 2
250	TT2-12K	N/A	N/A				New well installed Dec 2011 for Tracer Test No. 2
251	TT2-12M	N/A	N/A				New well installed Dec 2011 for Tracer Test No. 2
252	TT2-12P	N/A	N/A				New well installed Dec 2011 for Tracer Test No. 2
253	TT2-20J	N/A	N/A				New well installed Jan 2012 for Tracer Test No. 2

¹Elevation above mean sea level based on NGVD 1929

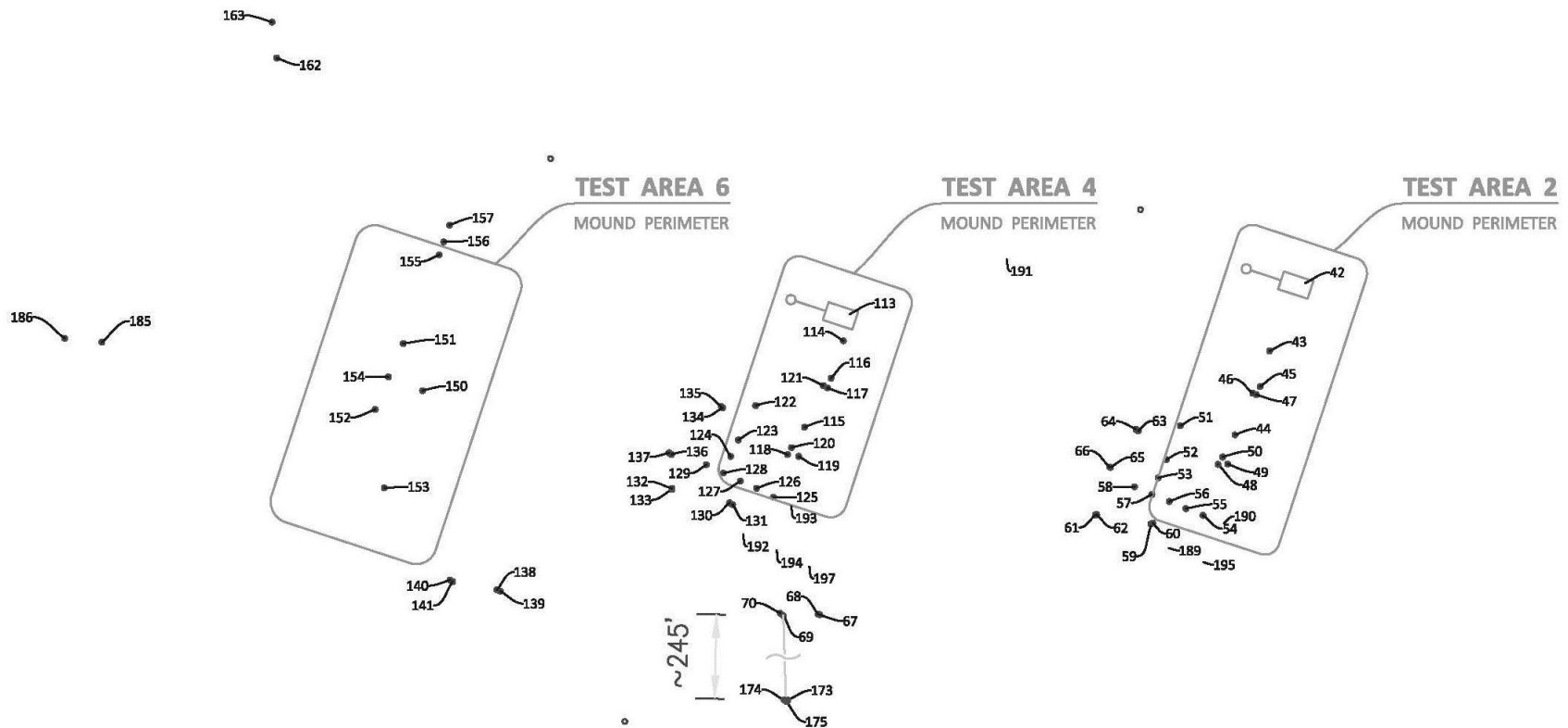


Figure 3
S&GW Test Facility System Schematic of TA2, TA4, and TA6 (ATU System)
¹Location identification corresponds to Table 1 ID #

4.0 Summary

GCREC desired to have the S&GW and PNRS II test facility properly abandoned. The abandonment work was completed in February and March 2015. A total of 253 specific monitoring points were removed during the S&GW Test Facility site close-out. This report documents that the test facility site was restored as desired by GCREC. Appendix B provides an agreement with GCREC acknowledging that the wastewater research and testing facility was properly abandoned and site restored as desired by GCREC.



Appendix A: Abandonment Permit

PRELIMINARY

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STATE OF FLORIDA
DEPARTMENT OF HEALTH
ONSITE SEWAGE TREATMENT AND DISPOSAL
SYSTEM
CONSTRUCTION PERMIT

PERMIT #: **29-SH-1588964**
APPLICATION #: **AP1177402**
DATE PAID: _____
FEE PAID: _____
RECEIPT #: _____
DOCUMENT #: **PR965072**

CONSTRUCTION PERMIT FOR: OSTDS Abandonment
APPLICANT: (UF Board of Trustees)
PROPERTY ADDRESS: 14625 CR 672 Wimauma, FL 33598
LOT: _____ BLOCK: _____ SUBDIVISION: _____
PROPERTY ID #: 088671.0000 [SECTION, TOWNSHIP, RANGE, PARCEL NUMBER]
[OR TAX ID NUMBER]

SYSTEM MUST BE CONSTRUCTED IN ACCORDANCE WITH SPECIFICATIONS AND STANDARDS OF SECTION 381.0065, F.S., AND CHAPTER 64E-6, F.A.C. DEPARTMENT APPROVAL OF SYSTEM DOES NOT GUARANTEE SATISFACTORY PERFORMANCE FOR ANY SPECIFIC PERIOD OF TIME. ANY CHANGE IN MATERIAL FACTS, WHICH SERVED AS A BASIS FOR ISSUANCE OF THIS PERMIT, REQUIRE THE APPLICANT TO MODIFY THE PERMIT APPLICATION. SUCH MODIFICATIONS MAY RESULT IN THIS PERMIT BEING MADE NULL AND VOID. ISSUANCE OF THIS PERMIT DOES NOT EXEMPT THE APPLICANT FROM COMPLIANCE WITH OTHER FEDERAL, STATE, OR LOCAL PERMITTING REQUIRED FOR DEVELOPMENT OF THIS PROPERTY.

SYSTEM DESIGN AND SPECIFICATIONS

T [1,050] GALLONS / GPD Septic CAPACITY
A [300] GALLONS / GPD (2) lift stations CAPACITY
N [] GALLONS GREASE INTERCEPTOR CAPACITY [MAXIMUM CAPACITY SINGLE TANK:1250 GALLONS]
K [] GALLONS DOSING TANK CAPACITY [] GALLONS @ [] DOSES PER 24 HRS #Pumps []
D [] SQUARE FEET (6) experimental drainfield SYSTEM
R [] SQUARE FEET _____ SYSTEM
A TYPE SYSTEM: [] STANDARD [] FILLED [] MOUND [] _____
I CONFIGURATION: [] TRENCH [] BED [] _____
N
F LOCATION OF BENCHMARK:
I ELEVATION OF PROPOSED SYSTEM SITE [] [] / [] [ABOVE / BELOW] BENCHMARK/REFERENCE POINT
E BOTTOM OF DRAINFIELD TO BE [] [] / [] [ABOVE / BELOW] BENCHMARK/REFERENCE POINT
L
D FILL REQUIRED: [0.00] INCHES EXCAVATION REQUIRED: [] INCHES

O Have the tank abandoned in accordance with the following procedures:(a) The tank shall be pumped out.(b) The bottom
T of the tank shall be opened or ruptured, or the entire tank collapsed so as to prevent the tank from retaining water,
H and(c) The tank shall be filled with clean sand or other suitable material, and completely covered with soil.Have the
E system inspected by the health department after it has been pumped and ruptured but before it is filled with sand and
R covered. (3) septic Tanks, (1) HOOT ATU, (6) mini-mound drainfields

SPECIFICATIONS BY: Michael A Dreyer TITLE: Environmental Supervisor II

APPROVED BY: Michael A Dreyer TITLE: Environmental Supervisor II Hillsborough CHD

DATE ISSUED: 02/23/2015 EXPIRATION DATE: 05/24/2015

DH 4016, 08/09 (Obsoletes all previous editions which may not be used)

Incorporated: 64E-6.003, FAC

v 1.1.4

AP1177402

SE-1

NOTICE OF RIGHTS

A party whose substantial interest is affected by this order may petition for an administrative hearing pursuant to sections 120.569 and 120.57, Florida Statutes. Such proceedings are governed by Rule 28-106, Florida Administrative Code. A petition for administrative hearing must be in writing and must be received by the Agency Clerk for the Department, within twenty-one (21) days from the receipt of this order. The address of the Agency Clerk is 4052 Bald Cypress Way, BIN # A02, Tallahassee, Florida 32399-1703. The Agency Clerk's facsimile number is 850-410-1448.

Mediation is not available as an alternative remedy.

Your failure to submit a petition for hearing within 21 days from receipt of this order will constitute a waiver of your right to an administrative hearing, and this order shall become a 'final order'.

Should this order become a final order, a party who is adversely affected by it is entitled to judicial review pursuant to Section 120.68, Florida Statutes. Review proceedings are governed by the Florida Rules of Appellate Procedure. Such proceedings may be commenced by filing one copy of a Notice of Appeal with the Agency Clerk of the Department of Health and a second copy, accompanied by the filing fees required by law, with the Court of Appeal in the appropriate District Court. The notice must be filed within 30 days of rendition of the final order.



Appendix B: GCREC Agreement

PRELIMINARY

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Florida Onsite Sewage Nitrogen Reduction Strategies Study

ABANDONMENT OF ONSITE WASTEWATER RESEARCH AND TESTING FACILITY

Location (City/County): Wimauma, Florida; Hillsborough County

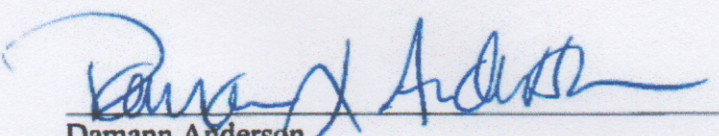
Property ID #: U-29-31-21ZZZ-000004-47620.0

As part of the Florida Department of Health Onsite Sewage Nitrogen Reduction Strategies Study, during the period June 2010 through March 2015, an onsite wastewater research and testing facility was designed, constructed, operated, and up kept at 14625 County Road 672, Wimauma, Florida 33598 as outlined in the Memorandum of Agreement between The Florida Department of Health (DOH) and The University of Florida Board of Trustees. The DOH study period for the onsite wastewater research and testing facility has now ended. As indicated in the agreement, FDOH contracted Hazen and Sawyer, P.C. (H&S) to properly abandon the research facility before the MOA expires. This document formalizes the test facility abandonment completed March 2015.

OWNER: I (We) ADS hereby do agree that the wastewater research and testing facility was properly abandoned and to the transfer of complete ownership and operational responsibilities for the referenced DOH onsite wastewater system. I hereby release DOH and Hazen and Sawyer, P.C. from any and all responsibility or liability for the performance or non-performance of this system after the date this acceptance of system agreement is signed by both parties below.

By signing below, both parties agree to the terms and conditions contained herein:

HAZEN AND SAWYER, P.C.

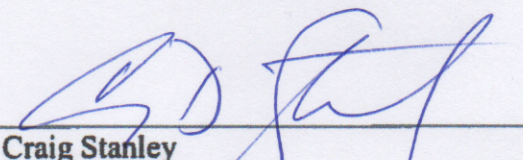


Damann Anderson
Vice President, Hazen and Sawyer, P.C.

3/23/15

date

GULF COAST RESEARCH AND EDUCATION CENTER



Dr. Craig Stanley
Associate GCREC Director, University of Florida, IFAS

3/23/15

date